

centricus; but, as we have already stated, we believe that this bird should be referred to the Brazilian species which we have termed *M. leucauchen*. The younger specimens, called *M. gilvicollis* by Herr v. Pelzeln, in spite of the number of tail-bands, we consider referable to the present bird, which he calls *M. concentricus*.

One of the main points which Herr v. Pelzeln urges as distinguishing his *M. gilvicollis* from his *M. concentricus* is that the former is in every age and sex, besides the termination, three white tail-bands, whereas the latter has usually only one, but sometimes two. But we do not consider this character altogether to be relied upon, it being notoriously variable in other species of Accipitres. When it is discarded there is, as far as we can see, nothing to prevent us associating the two immature female birds from the Amazonian district, which Herr v. Pelzeln refers to *M. gilvicollis* (as distinguished from *M. concentricus*), with the present species.

We may also urge that this interpretation is more consonant with the phenomena of geographical distribution, it being *primâ facie* unlikely that two so closely allied species should be found maintaining their distinctive characters in the same area.

All the specimens of the present species which have come before us with ascertained localities have been either from Guiana or from some part of Amazonia, which we regard as belonging to the same fauna. Natterer's specimens were collected at Para and upon the Rio Negro. Other specimens we have seen are from Cayenne and the Lower Amazon. Tschudi's Peruvian specimens have no doubt been correctly referred by Cabanis to the present bird; but we have not yet had an opportunity of ascertaining to which species D'Orbigny's Bolivian examples belong.

3. On the Fishes of Orissa.

By Surgeon FRANCIS DAY, F.Z.S., F.L.S.—Part II.*

Amongst the Siluroids, I captured one small specimen of a *Hara* in Orissa, which I left undescribed; I have since taken many more, and compared them with those in the Calcutta Museum. It is the

78. HARA BUCHANANI, Blyth.

D. $\frac{1}{6}$ | 0. P. $\frac{1}{6}$. V. 6. A. $\frac{3}{7}$. C. 15.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{5}$ of the total length. The bases of the first dorsal and anal fins are of the same length, and equal the distance from the posterior margin of the orbit to the end of the snout. The length of the base of the adipose dorsal is only equal to one-half of that of the anal. Height of body equals the length of the head; the width of the head opposite the opercles equals $1\frac{1}{2}$ its length.

Eyes small, situated in the posterior half of the head.

Gill-openings narrow, the skin confluent with that of the isthmus.

* See P. Z. S. 1869, p. 292.

Maxillary barbels dilated at their bases; they extend as far as the pectoral fin. The four mandibular barbels are on a transverse line; the two outer the longest, reaching the gill-opening. Nostrils placed close together and divided by a short barbel. The occipital process is about three times as long as wide at its base, and has another parallel bony process on either side. Basal bone considerably dilated. Humeral process rugose, elongate, and with two ossicles posterior to it.

Teeth villiform in the jaws and also in a fine band on the palate.

Fins. Dorsal spine stout and nearly as long as the head, serrated posteriorly. Pectoral spine one-fourth longer, flattened, strongly serrated internally, and with finer serrations externally but arranged in a very peculiar manner, each alternate tooth being directed anteriorly or posteriorly. Pectorals reaching ventrals. Caudal deeply forked.

Skin covered with little rough elevations, which in the posterior part of the body are in parallel lines. This roughness is also seen on the cheeks.

Lateral line proceeds direct towards the centre of the base of the caudal fin, but ceases before arriving so far.

Colours. Brownish, banded with a darker shade. Fins banded with black. Barbels annulated with black.

This little fish grows to about $2\frac{1}{2}$ inches in length, and lives amongst weeds or in very muddy parts of rivers.

The *Cyprinidæ* are extensively represented in Orissa.

79. CATLA BUCHANANI, Cuv. & Val.

Barkur (Oorlah).

B. iii. D. $\frac{3-4}{14}$. P. 21. V. 9. A. $\frac{3}{5}$. C. 19. L. l. 40-43.
L. tr. $\frac{7\frac{1}{2}}{9}$. Vert. $\frac{17}{18}$.

The gill-rakers in the adult are long, moderately strong, and set rather widely apart.

The *Cyprinus abramioides*, Sykes, may be this species, which abounds in the river Kistna.

80. AMBLYPHARYNGODON MOLA, H. Buch.

Morara (Oorlah).

B. iii. D. $\frac{2}{7}$. P. 15. V. 9. A. $\frac{3}{5}$. C. 20. L. l. 71-75.
L. tr. 20.

Dr. Günther observes that the engraving of *Leuciscus melettinus*, Cuv. & Val., is incorrect; for he considers the lateral line, instead of being continued to the base of the caudal fin as delineated, ought to cease, which would make it an *Amblypharyngodon*. Might not the drawing be correct, and the species be a *Thynnichthys*, as I have taken one in India? Mr. Blyth (Journ. Asiat. Soc. of Bengal, 1860, p. 164) observed of his genus *Mola*, of which he made this species his type, "The (*Leuciscus*) *harengula* and (*L.*) *melettina* of Valenciennes should also range in the same division, even if the lateral line be

continuous as represented in the figures of those species." The correctness of placing *Amblypharyngodon* and *Thynnichthys* as distinct genera is, I think, questionable; and I am the more confirmed in this belief by an examination of the *A. atkinsonii*, Blyth (not *A. pellucidus*, M'Clelland), from Burmah, in which the lateral line is continued for one-third of the length of the body of the fish, or for 19 scales, thus reaching nearly as far as the base of the ventral fin, from which it is divided by six rows of scales.

81. *CIRRHINA MRIGALA*, H. Buch.

Mrigale, *Mirrgah* (Oorlah).

B. iii. D. $\frac{3}{15}$. P. 17. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 40-43.
L. tr. $\frac{8-9}{9}$.

Differs from the *C. leschenaultii*, Cuv. & Val., by only having the rostral barbels. In Orissa it appears entirely to supersede the *C. leschenaultii*, which is a species very common in Madras.

Amongst the fishes brought to Calcutta by the late expedition to China are specimens of the *C. mrigala*, H. Buch., probably identical with *C. chinensis*, Günther.

82. *CROSSOCHEILUS BATA*, H. Buch.

Crossocheilus rostratus, Günther (immature).

Dunguda porah (Oorlah). *Dommarci batta* (Bengali).

B. iii. D. $\frac{2-3}{9}$. P. 19. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 36-38.
L. tr. $\frac{5\frac{1}{2}-6\frac{1}{2}}{6-7}$.

This species I obtained throughout Orissa, as well as from the Cossye, where Dr. Günther's specimen, 4 inches long, was captured. I have therefore no doubt respecting its identity, although he remarks of the *genus*, "Barbels two or four; if two, the upper only are present;" and of the *species*, "two barbels, only shorter than the eye;" whereas in this fish it is the maxillary ones which exist.

It loses the black spots on the lateral line more or less completely when it attains a mature state. Being largely domesticated, however, it is subject to certain variations. In one specimen, 10 inches long, the snout was covered with elevated pores, whilst another of the same size, taken along with it, was destitute of them.

The number of rows of scales between the lateral line and base of the ventral fin sometimes alters with age. Thus in the immature there are generally four series, but in the adult five. This fish grows to two feet in length.

83. *CROSSOCHEILUS GOHAMA*, H. Buch.

Kala batta (Bengali).

B. iii. D. $\frac{3}{8}$. P. 15. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 38-40. L. tr. $\frac{6}{8}$.

This fish has a distinct lateral lobe to the snout.

Hab. Cossye river, at Midnapore.

84. *CROSSOCHEILUS REBA*, H. Buch.*Chetchua porah* (Ooriah). *Batta* (Bengali).B. iii. D. $\frac{3}{8}$. P. 15. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 35-38. L. tr. $\frac{7}{4}$.

The *Chondrostoma boggut*, Sykes, appears to be identical with this species, which is common in the Kistna river.

85. *LABEO FIMBRIATUS*, Bloch.*Labeo leschenaultii*, Cuv. & Val.*Bakrum* (Ooriah).

B. iii. D. $\frac{4}{16-17}$. P. 15. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 44-48.
L. tr. $\frac{9-10}{8-9}$.

Hab. Found in rivers and tanks.

The *Varicorhinus bobree*, Sykes, appears to be this species, which is abundant in the Kistna.

86. *LABEO GONIUS*, H. Buch.*Labeo microlepidotus*, Cuv. & Val.*Labeo dussumieri*, part.?, Günther.*Cursua* (Ooriah).

B. iii. D. $\frac{3}{13-14}$. P. 17. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 64-74.
L. tr. $\frac{14}{15}$.

Length of head $\frac{2}{11}$, of pectoral $\frac{2}{13}$, of base of dorsal $\frac{2}{9}$, of base of anal $\frac{1}{15}$, of caudal $\frac{2}{11}$ of the total length. Height of head $\frac{1}{8}$, of body $\frac{1}{4}$, of dorsal fin $\frac{2}{11}$, of ventral $\frac{1}{8}$, of anal $\frac{1}{8}$ of the total length.

Eyes. Diameter $\frac{2}{9}$ of length of head, $1\frac{1}{2}$ diameter from end of snout, $2\frac{1}{2}$ diameters apart.

No lateral lobe to snout, which is covered with fine pores. Two pairs of very short barbels, the maxillary being slightly the longest. Lips thick, with a distinct fold, and also fringed.

Teeth pharyngeal, with flattened crowns, 5, 4, $2\frac{1}{2}$, 4, 5.

Fins. Dorsal commences much nearer to the snout than to the base of the caudal fin, and anterior to the ventral.

Scales. Nine and a half rows between lateral line and base of the ventral fin, in large specimens from Burmah eight and a half.

As food this fish is said to be indifferent. Many specimens were taken in the rivers of Orissa up to $13\frac{2}{10}$ inches in length.

The species is very closely allied to, if not identical with *Labeo cursa*, H. Buch., which, however, is said to have 11 or 12 rows between the lateral line and base of ventral fin.

87. *LABEO CALBASU*, H. Buch.*Cirrhinus affinis*, Jerdon, Madras Journ. Lit. & Sc.*Kala beinse* (Ooriah).

B. iii. D. $\frac{3}{14-15}$. P. 19. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 41-44.
L. tr. $\frac{7\frac{1}{2}}{9}$.

In one specimen taken in the Cossye the scales were spotted with red.

Hab. Rivers and tanks in Orissa.

88. LABEO ROHITA, H. Buch.

Ruhu (Oorlah).

B. iii. D. $\frac{3}{12-13}$. P. 17. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 41. L. tr. $\frac{6\frac{1}{2}}{9}$.

Hab. Rivers and tanks in Orissa.

89. LABEO RICNORHYNCHUS, M'Clelland.

Kul-ka-batta (Bengali).

B. iii. D. $\frac{3}{10}$. P. 17. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 42. L. tr. $\frac{8}{9}$.

Pharyngeal teeth 5, 4, 2/2, 4, 5.

I am doubtful whether this fish should not be referred to *Cyprinus musiha*, H. Buch., which, however, Dr. Günther considers to be the *Labeo morala*; and he remarks, "four barbels as long as the eye;" whereas Buchanan observes, "it (*Cyprinus musiha*) differs from the description of the *moralala* in nothing but the want of tendrils."

90. LABEO BOGA, H. Buch.

Kala battali (Oorlah).

B. iii. D. $\frac{2-3}{11}$. P. 17. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 42. L. tr. $\frac{7\frac{1}{2}}{7}$.

My reason for being unable to accept the genus *Tylognathus*, Günther, is, that "the separation of this genus from *Labeo* is artificial," being defined in its having nine or less branched rays, down to which number *Labeo* is included. Thus the existence of an extra ray in the dorsal fin, or whether the last double dorsal ray is regarded as one or two might alter the *genus* of the species. The same author has observed respecting the genus *Barbus*, which has been subdivided into several genera and subgenera, "Nothing would more be contrary to the idea of natural genera, the transition from one extreme species to the other being perfect" (p. 84).

Hab. Rivers and tanks of Orissa.

Dr. Günther notices how the subgeneric forms of the genus *Barbus*, as *Barbodes* with two pairs of barbels, *Capoeta* with one pair, and *Puntius* destitute of any, pass gradually from one into another. But in specimens from India I do not think it will be of common occurrence to find barbels abnormally increased or decreased in numbers. I have tried, but hitherto unsuccessfully, to obtain such specimens. Even if such were frequent, their abnormal or accidental absence will scarcely be considered a sufficient reason against accepting such natural *subgeneric* divisions of this exceedingly extensive genus.

Dorsal ray serrated.

91. BARBUS (BARBODES) CHAGUNIO, H. Buch.

Barbus beavani, Günther.

Jerruah (Bengali).

B. iii. D. $\frac{3}{8}$. P. 15. V. 9. A. $\frac{3}{5}$. C. 19. L. l. 44. L. tr. $\frac{11}{11}$.

Many of the young of this species were taken in the Cossye river, at Midnapore, up to $3\frac{1}{2}$ inches in length; it is said, however, to attain to 18 inches. A specimen 11 inches long exists in the Calcutta Museum.

92. BARBUS (BARBODES) SARANA, H. Buch.

Barbus chrysopoma, Cuv. & Vai.

Barbus russellii, Günther.

Sarana (Oorlah and Bengali). *Kunnaku* (Telugu).

B. iii. D. $\frac{3-4}{8}$. P. 15. V. 9. A. $\frac{3}{5}$. C. 19. L. l. 28-32. L. tr. $\frac{6}{5}$.

This species is subject to slight variations in accordance with age, the locality it inhabits, and the sex of the specimens. I obtained it from Trichinopoly in the south, to the Hooghly in the north, and have received it from Yunam in China.

Dorsal ray entire.

93. BARBUS (BARBODES) TOR, H. Buch.

? *Cyprinus mosal*, H. Buch.

B. iii. D. $\frac{3}{9}$. P. 18. V. 9. A. $\frac{2}{5}$. C. 18. L. l. 23-27. L. tr. $\frac{4}{2}$.

Some young specimens of the species or variety with the thick labial lobes were taken in the Mahanuddi. The fish is said to grow to 3 or 4 feet in length at the base of the hills.

Dorsal ray entire.

94. BARBUS (CAPOËTA) CHOLA, H. Buch.

Barbus sophoroides, Günther.

Kerrundi (Bengali).

B. iii. D. $\frac{3}{8}$. P. 15. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 25-26. L. tr. $\frac{5\frac{1}{2}}{6}$.

Hab. Cossye river.

Dorsal ray serrated.

95. BARBUS (PUNTIUS) AMBASSIS, Day.

Bunkuai (Oorlah).

B. iii. D. $\frac{3}{8}$. P. 11. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 36.

Hab. Rivers of Orissa.

96. BARBUS (PUNTIUS) GELIUS, H. Buch.

Cutturpoh (Oorlah).

B. iii. D. $\frac{3}{8}$. P. 15. V. 9. A. $\frac{3}{5}$. C. 19. L. l. 25. L. tr. 9.

Lateral line incomplete, only extending along 5 or 6 scales.

Hab. Tanks in Orissa.

97. BARBUS (PUNTIUS) TICTO, H. Buch.

Kudji kerundi (Ooriah).B. iii. D. $\frac{3}{8}$. P. 15. V. 9. A. $\frac{2}{5}$. C. 19. L. l. 23. L. tr. $\frac{5}{6}$.

Lateral line incomplete.

In some specimens the fins are black.

Hab. Rivers and tanks.

98. BARBUS (PUNTIUS) PHUTUNIO, H. Buch.

Kudji kerundi (Ooriah).B. iii. D. $\frac{3}{8}$. P. 15. V. 9. A. $\frac{3}{5}$. C. 19. L. l. 20–23. L. tr. 8–10.

The dorsal ray in some specimens, apparently in all in Orissa, undergoes a very curious change in this species. Serrated in the young, the teething decreases as age advances, so that when the fish is about 2 inches in length the ray is quite smooth. This I do not find to be the case in specimens from Burmah, five fine ones of which are in the Calcutta Museum, up to 2 inches in length. Their lateral line has 23 scales, and their lateral transverse $\frac{5}{5}$. Mr. Blyth remarked upon these specimens in the 'Journ. Asiat. Soc. Beng.' 1860, p. 159, considering them, and I believe correctly, to be of this species. Dr. Günther has named some specimens from Ceylon *B. cuningii* and *B. nigrofuscatus*, the one having two, the other three vertical bands, a very common occurrence in this species—adding also that the latter have one more row of scales, and are scarcely striated, which is not the case in those he has seen of the former. Dr. Bleeker appears to have considered the Ceylon and Indian forms identical; but, without comparing specimens from the two localities, it must be exceedingly difficult to offer an opinion, especially as this fish is subject to considerable variations, and the Indian form does not appear to be in the British-Museum collection. Some of my Orissa specimens have six striæ on each scale, others four, whilst in some no striæ are observable. Many have twenty-one rows of scales on the body.

Dorsal ray entire.

99. BARBUS (PUNTIUS) STIGMA, Cuv. & Val.

Systomus sophore, M'Clelland.*Puntius modestus*, Kner.*Patia kerundi* (Ooriah).B. iii. D. $\frac{3}{8}$. P. 17. V. 9. A. $\frac{3}{5}$. C. 19. L. l. 25.
L. tr. $\frac{5}{4}$. Vert. $\frac{15}{14}$.

Kner's fish shows a coloration which is very common, denoting the specimen to be out of season, in bad health, or that it has been macerated some time.

I gave my reasons, in the P. Z. S. for 1868, p. 198, for not accepting Dr. M'Clelland's fish as identical with Hamilton Buchanan's. In the old collection of the fishes of the Asiatic Society of

Bengal I find the true species still exists, but without any label; it is as follows:—

BARBUS (BARBODES) SOPHORE, H. Buch.

B. iii. D. 3/9. P. 15. V. 9. A. 2/5. L. l. 25. L. tr. $\frac{3\frac{1}{2}}{4\frac{1}{2}}$.

Length of head $\frac{1}{4}$ of length of body. Height of body rather more than the length of the head.

Eyes. Rather more than $\frac{1}{3}$ of length of head, 1 diameter from end of snout, 1 diameter apart.

Barbels four, the rostral ones reaching the anterior margin of the orbit, the maxillary ones extending to below the middle of the eye. Cleft of mouth extending to under orbit.

Fins. Dorsal arises midway between the snout and the base of the caudal; its third ray is rather weak, osseous, smooth, and as long as the head without the snout. The ventral arises a little posterior to the dorsal.

Scales. Two and a half rows between the lateral line and the base of the ventral fin.

The specimen is $3\frac{1}{2}$ inches to the base of the caudal fin, which is injured from pressure. The specimen is bleached.

100. BARBUS (PUNTIUS) COSUATIS.

B. iii. D. 3/8. P. 13. V. 9. A. 2/5. C. 19. L. l. 22. L. tr. 6.

Lateral line incomplete, ceasing on the fourth scale.

Hab. This little species I took in the Midnapore district.

101. BARBUS (PUNTIUS) VITTATUS, Day.

Putti (Oorlah).

B. iii. D. 2/8. P. 12. V. 9. A. 2/5. C. 20. L. l. 20-22. L. tr. $\frac{4}{3}$.

Lateral line incomplete.

Hab. Rivers and tanks in southern Orissa.

102. BARBUS (PUNTIUS) TERIO, H. Buch.

Kakachia kerundi (Oorlah).

B. iii. D. $\frac{3}{5}$. P. 15. V. 9. A. 3/5. C. 18. L. l. 21. L. tr. 5/5.

Lateral line incomplete.

Hab. Tanks in Orissa.

103. RASBORA DANICONIUS, H. Buch.

Dundikerri (Oorlah).

B. iii. D. 2/7. P. 15. V. 9. A. 3/5. C. 19. L. l. 33-34. L. tr. 5/3.

Hab. Rivers and tanks.

104. NURIA DANRICA, H. Buch.

Dundikerri (Ooriah).B. iii. D. 2/6. P. 12. V. 9. A. $\frac{2-3}{5}$. L. l. 32-34. L. tr. $\frac{5-6}{2}$.*Hab.* Rivers and tanks.

105. ASPIDOPARIA MORAR, H. Buch.

Aspidoparia sardina, Heckel.*Bayi* (Ooriah). *Morari* (Bengali).B. iii. D. 3/8. P. 15. V. 8. A. 2/10. C. 19. L. l. 42.
L. tr. $\frac{5\frac{1}{2}}{2\frac{1}{2}}$. Vert. $\frac{14}{21}$.

This species is very common in Orissa, but still more so in the Cossye river, where it attains $4\frac{1}{2}$ inches in length. I obtained one adult specimen in which the anal fin was entirely absent.

106. DANIO (PARADANIO) DEVARIO, H. Buch.

Bonkuaso (Ooriah).B. iii. D. $\frac{2}{13-14}$. P. 13. V. 6. A. $\frac{3}{14}$. C. 17. L. l. 41. L. tr. $\frac{11}{3\frac{1}{2}}$.

Length of head $\frac{1}{5}$, of pectoral $\frac{1}{5}$, of base of dorsal $\frac{1}{5}$, of base of anal $\frac{1}{5}$, of caudal $\frac{1}{4}$ of the total length. Height of head $\frac{2}{11}$, of body $\frac{1}{3}$, of dorsal fin $\frac{1}{5}$, of ventral $\frac{1}{7}$, of anal $\frac{1}{7}$ of the total length.

Eyes. Diameter $\frac{1}{3}$ of length of head, $\frac{3}{4}$ of a diameter from end of snout, $1\frac{1}{4}$ diameter apart.

Posterior extremity of upper jaw extends to beneath the anterior margin of the orbit. The lower jaw is the longest. Third sub-orbital bone broad. Barbels absent.

Fins. Dorsal commences midway between the anterior margin of the orbit and the base of the caudal fin. Pectoral reaches the ventral, which last extends nearly to the anal. The anal commences below about the third dorsal ray. Caudal lunated.

Scales. Two and a half rows between the lateral line and the base of the ventral fin.

Colours. Superiorly greenish, becoming silvery white on the abdomen. The anterior portion of the body is reticulated in its centre with steel-blue lines, divided from one another by narrow yellow bands. Three bluish lines are continued towards the caudal fin, where the two lower coalesce, and passing upwards become lost on the upper half of the caudal fin.

Hab. Salundee river, in Orissa.

This species varies but slightly from the *D. devario*, H. Buch., of which I consider it a variety. Some five specimens of the *D. devario* have been received from Assam at the Calcutta Museum, and they have A. $\frac{3}{16}$, but do not otherwise differ from the Orissa fish.

107. BARILIUS (PACHYSTOMUS) COSCA, H. Buch.

Bahgra bahri (Ooriah).B. iii. D. $\frac{2}{7}$. P. 13. V. 9. A. $\frac{2}{7-8}$. C. 18. L. l. 42. L. tr. $\frac{9}{3}$.*Hab.* Common in rivers in Orissa.

108. BARILIUS (PACHYSTOMUS) LINEATUS, Day.

Poncha geraldi (Oorlah).B. iii. D. $\frac{2}{7}$. P. 13. V. 8. A. $\frac{3}{12}$. C. 19. L. l. 28. L. tr. 6.

Lateral line absent.

This fish I have placed as a *Barilius* instead of *Danio*, in accordance with Dr. Günther's division of the two genera. I find in the Calcutta Museum several specimens obtained from the Hooghly by Mr. Blyth, and labelled *Cyprinus rerio*, H. Buch. It may therefore turn out to be this latter species, which I shall shortly be able to determine in the locality where the original species exists; the *C. rerio* is said to have D. 8, V. 7, A. 16.

109. BARILIUS (BENDILISIS) BARILA, H. Buch.

Gilland (Bengali).B. iii. D. $\frac{2}{7}$. P. 13. V. 9. A. $\frac{3}{10}$. C. 19. L. l. 44-46. L. tr. $\frac{6\frac{1}{2}}{4}$.

This species has two very fine rostral barbels, whose existence has been overlooked.

Teeth. Pharyngeal 5, 4, 3/3, 4, 5.*Hab.* Cossye river, where it attains 4 inches in length.

110. BARILIUS (BARILIUS) BARNA, H. Buch.

Bahri (Oorlah).B. iii. D. $\frac{2}{7}$. P. 13. V. 9. A. $\frac{3}{10}$. C. 19. L. l. 42. L. tr. 9/4.

Dorsal fin rather higher than long; its last ray is over the anal, and only extends halfway to the base of the caudal. A variety exists in the Mahanuddi which has the dorsal rays rather more elevated, the eye slightly larger, and the cleft of the mouth a little greater.

111. BARILIUS (BARILIUS) PAPILLATUS, sp. n.

B. iii. D. 3/7. P. 15. V. 9. A. $\frac{3}{10-11}$. C. 21. L. l. 39.
L. tr. $\frac{7\frac{1}{2}-8\frac{1}{2}}{6\frac{1}{4}}$.

Length of head $\frac{1}{5}$, of pectoral $\frac{2}{11}$, of base of dorsal $\frac{2}{11}$, of base of anal $\frac{2}{11}$, of caudal $\frac{1}{5}$ of the total length. Height of head $\frac{1}{6}$, of body $\frac{2}{7}$, of dorsal fin $\frac{2}{11}$, of anal $\frac{1}{8}$ of the total length.

Eyes. Diameter $\frac{1}{3}$ of length of head, nearly 1 diameter from end of snout.

Third suborbital bone thrice as deep as the cheek below it; humeral process rather narrow. No barbels.

Fins. Dorsal arises midway between the posterior margin of the orbit and the base of the caudal fin; its base is as long as the fin is high; the last ray is thickened and divided to its root; it reaches as far as the base of the caudal fin. The pectoral extends to beyond the origin of the ventral, and the latter fin to the base of the anal; its inner rays are thickened and rather stiff. The caudal is forked in its posterior two-thirds, and the lower lobe is rather the longest; the ends of both are rounded.

Scales in regular rows, each scale having a few round elevated spots upon it. Three and a half rows between the lateral line and the base of the ventral fin.

Lateral line first curves gently downwards; subsequently it is continued to just below the centre of the base of the caudal fin.

Colours. Canary-colour, with the back stained grey, and from seven to nine broad and deep blue bands extending from the back to the abdominal profile. Dorsal fin stained with grey in its upper third, as is also the caudal in its posterior third.

Hab. Cossye river, attaining 3 inches in length, and said not to be common; however, I obtained eleven specimens. A variety exists in the Mahanuddi, the eye being somewhat smaller, opercle less wide, but otherwise similar.

Genus OPSARIUS.

OPSARIUS, sp., M'Clelland.

Bola, Günther, preoccupied by Genus VI. in Hamilton Buchanan's 'Fishes of the Ganges,' p. 73.

112. OPSARIUS GOHA, H. Buch.

Leuciscus salmonoides, Blyth.

Bugguah (Bengali).

B. iii. D. $\frac{3}{7}$. P. 13. V. 9. A. $\frac{3}{10}$. C. 19. L. 1. 88. L. tr. $\frac{12}{9}$.

Hab. Cossye river at Midnapore.

Genus ROHTEE, Sykes, 1841.

Osteobrama, Heckel, 1842.

113. ROHTEE VIGORSII, Sykes.

Osteobrama rapax, Günther.

Gollund (Ooriah).

B. iii. D. $\frac{3}{8}$. P. 19. V. 10. A. $\frac{3}{22-23}$. C. 19. L. 1. 75.

L. tr. $\frac{18}{19}$.

Dr. Günther considers that Colonel Sykes's species is identical with *Rohtee* (*Cyprinus*) *cotio*, H. Buch.; but if the two figures pl. 39. f. 93, 'Fishes of the Ganges,' and t. 63. f. 3, of Sykes's 'Fishes of the Dekkun,' are compared, the distinction is apparent. In the former the ends of the jaws are even in front; in the latter the lower jaw projects. Besides this I obtained numbers of this species in the Kistna river, from one of whose tributaries some of Col. Sykes's specimens were probably procured; on the other hand I could not find the *R. cotio* in that river. Col. Sykes appears to have written 29 instead of 26 rays for the anal fin, but a few more or less does not seem to have been considered of great moment, especially as the drawing gives 36.

Hab. Rivers and tanks in Orissa.

114. ROHTEE ALFREDIANA, Cuv. & Val.

Gunda, Gollund (Ooriah).B. iii. D. $\frac{3}{7}$. P. 13. V. 10. A. $\frac{2}{30}$. C. 19. L. 1. 57-60.*Hab.* Rivers and tanks in Orissa.

Genus PERILAMPUS, M'Clelland.

Cachias, Günther.

115. PERILAMPUS ATPAR, H. Buch.

Perilampus macropodus, Jerdon.*Bonkuaso* (Ooriah).B. iii. D. 2/7. P. 10. V. 5-6. A. $\frac{2-3}{19-21}$. C. 19. L. 1. 55.L. tr. $\frac{10-12}{4}$.This fish in some rivers and tanks appears to entirely supersede the *Rasbora*.

116. PERILAMPUS LAUBUCA, H. Buehl.

Bankoe (Ooriah).B. iii. D. 2/9. P. 13. V. 6. A. $\frac{2}{17-20}$. C. 19. L. 1. 34.

L. tr. 7/5.

Length of head $\frac{1}{6}$, of pectoral $\frac{1}{3}$, of base of dorsal $\frac{1}{8}$, of base of anal $\frac{1}{5}$, of caudal $\frac{1}{5}$ of the total length. Height of head $\frac{1}{8}$, of body $\frac{1}{4}$, of dorsal $\frac{1}{8}$, of ventral $\frac{1}{12}$, of anal $\frac{1}{8}$ of the total length.*Eyes.* Upper margin near the dorsal profile, diameter $\frac{1}{3}$ of length of head, nearly 1 diameter from end of snout, $1\frac{1}{4}$ diameter apart.

Body somewhat elevated to the base of the dorsal fin, with a slight concavity over the occiput. The whole of the body much compressed, with the abdominal edge cutting from the pectoral to the anal fin.

Teeth pharyngeal, 5, 4, 1/1, 4, 5.

Fins. Dorsal arises slightly posterior to the origin of the anal. Pectoral ray elongated and reaching as far as the base of the anal. The outer ray of the ventral slightly elongated. Caudal deeply forked.*Scales.* Three and a half rows between the lateral line and the base of the ventral fin.*Colours.* Silvery, with some vertical golden stripes, which disappear after death. The whole of the body with fine black dots, and a black mark, shot with green, above the base of the pectoral fin, and another at the base of the caudal.This fish is common in Orissa, growing to 3 inches in length, and is without doubt Hamilton Buchanan's species delineated by M'Clelland at t. 45 (erroneously also marked 56), and t. 4 (erroneously marked 10)*. Many specimens received from different localities exist in the Calcutta Museum, and have been correctly labelled *Perilam-*

* See M'Clelland, 'Indian Cyprinidae,' p. 314.

pus laubuca, H. Buch., by Mr. Blyth. Dr. Günther has evidently received a very different fish from the Hooghly (? *Cyprinus dan-cena*, H. Buch.); for it is referred to the genus *Chela*, under which head I perceive he has also placed the *Perilampus fulvescens*, Blyth, whose two typical specimens I have examined in the Calcutta Museum, and which do not belong to the genus *Chela*, H. Buch., but to *Perilampus*, M'Clelland.

117. CHELA PHULO, H. Buch.

B. iii. D. 2/7. P. 13. V. 9. A. 3/17. C. 19. L. l. 87.
L. tr. 12/6.

Hab. Rather common in rivers and tanks in Orissa.

118. CHELA UNTRAHI, sp. n.

Untrahi (Oorlah).

B. iii. D. 2/7. P. 13. V. 7. A. 3/17. C. 17. L. l. 52.
L. tr. 7/5.

Length of head $\frac{1}{6}$, of pectora $\frac{1}{5}$, of base of dorsal $\frac{1}{15}$, of base of anal $\frac{1}{6}$, of caudal $\frac{1}{5}$ of the total length. Height of head $\frac{1}{9}$, of body $\frac{1}{5}$, of dorsal $\frac{1}{9}$, of ventral $\frac{1}{9}$, of anal $\frac{1}{9}$ of the total length.

Eyes. Upper margin near the profile, diameter $\frac{1}{3}$ of length of head, $\frac{2}{3}$ of a diameter from end of snout, nearly 1 diameter apart.

Dorsal profile nearly horizontal, abdominal profile with a cutting-edge from opposite the base of the pectoral fin.

Mouth very oblique, knob or symphysis minute. The lower jaw in advance of the upper, and the maxilla extends to under the anterior margin of the orbit. Suborbital ring of bones moderately wide.

Fins. Pectorals reaching ventrals, and a dilated humeral supporting a smooth thoracic edge. Dorsal arises midway between the posterior margin of the orbit and the posterior extremity of the caudal fin, and is situated over the anterior anal ray. Caudal lobed, the lower the longest.

Scales deciduous, extending as far forwards on the nape as to opposite the posterior margin of the orbit.

Latéral line descends rather abruptly to opposite the posterior third of the pectoral fin, whence it is continued along the lower margin of the abdomen, ceasing a little beyond the posterior extremity of the anal fin. One row of scales between it and the origin of the ventral.

Colours. Silvery.

Hab. Mahanuddi, grows to 5 inches in length.

119. CHELA GORA, H. Buch.

Hum catchari (Oorlah).

B. iii. D. 3/7. P. 15. V. 9. A. 2/13. C. 19. L. l. 140-160.

The scales on the top of the head extend as far forwards as the nostrils.

This species I first obtained at Jellasore, in Orissa, on the frontier of the Midnapore district. It grows to 9 inches in length.

120. CHELA BACAULA, H. Buch.

Jellahri (Oorlah).B. iii. D. 2/7. P. 13. V. 9. A. $\frac{2}{12-13}$. C. 19. L. 1. 110.*Hab.* Common in rivers and tanks, attaining 9 inches in length.

Dr. Jerdon, in the Madras Journ. of Lit. & Sci. 1849, p. 327, expressed his doubts whether a species of *Chela* which he obtained in the Canvery, and termed *Pelecus flavipinnis*, might not be identical with the *Leuciscus novacula*, Val. Having taken the former in the Canvery, I find the fins rays to be as follows:—

B. iii. D. 2/7. P. 13. V. 9. A. $\frac{3}{14-16}$. C. 19. L. 1. 65.
L. tr. 9/5.

The *Chela novacula* is said to have the following:—

B. iii. D. 9. A. 17. L. 1. 60. L. tr. 15/3.

121. NEMACHEILUS BOTIA, H. Buch.

B. iii. D. 3/11. P. 13. V. 8. A. 3/5. C. 19. L. 1. 70-80.
L. tr. 14/15.

The variety existing in Orissa is that without any projection below the skin in the præorbital region (*N. bilturio*, H. Buch.), whilst in all the Assam specimens I have examined this prominence is more or less distinct (*N. botia*, H. Buch.).

Hab. Orissa, and in the Cossye river at Midnapore, where it attains 2½ inches in length.

122. NEMACHEILUS MUGAH, sp. n.

Mugah (Bengali).B. iii. D. 2/7. P. 11. V. 8. A. $\frac{2}{5-6}$. C. 17.

Length of head $\frac{1}{5}$, of pectoral $\frac{1}{7}$, of base of dorsal $\frac{1}{6}$, of base of anal $\frac{1}{12}$, of caudal $\frac{1}{5}$ of the total length. Height of head $\frac{1}{8}$, of body $\frac{2}{13}$, of dorsal fin $\frac{2}{13}$, of ventral $\frac{2}{15}$, of anal $\frac{2}{15}$ of the total length.

Eyes. Small, diameter $\frac{1}{5}$ of length of head, 2 diameters from end of snout, 1½ diameter apart.

Body fusiform, with compressed sides. The free portion of the base of the caudal as long as high.

Snout pointed, overhanging the jaws. Nostrils much nearer to the orbit than to the end of the snout. No enlargement of the præorbital. The two pairs of rostral and the maxillary barbels all about as long as the eye. A rather deep central longitudinal groove extends from opposite the posterior margin of the orbit to the end of the occiput.

Fins. Dorsal arises midway between the snout and the base of the caudal fin, its upper margin is straight. Pectoral extends more than halfway to the base of the ventral, which latter is situated under the anterior third of the dorsal, whilst the fin reaches halfway to the base of the anal. The anal is situated in the posterior two-fifths of the total length. Caudal emarginate in its last fifth.

Scales small but very distinct; twelve rows exist between the

lateral line and the dorsal profile, and thirteen between it and the base of the ventral fin.

Lateral line arises by two roots close to the head; they soon join, when it goes direct to the centre of the base of the caudal fin.

Air-bladder small, enclosed in a bony capsule.

Colours. Yellowish, with a tinge of green. About fifteen brown bands, one-third as wide as the ground-colour, pass across the back and descend on either side below the lateral line; a few near the head, and some in the posterior third of the body, are interrupted. Upper surface of head marbled with black. Fins immaculate; but the first two rays of the anal are black anteriorly, and there are also slight black marks near the end of the ventral and on the outside of the pectoral. Rostral barbels orange.

Hab. Cossye river at Midnapore, where it attains 2 inches in length.

123. COBITIS GUNTEA, H. Buch.

Kondaturi, Jupkari (Oorlah).

B. iii. D. $\frac{2}{6-7}$. P. 9. V. 8. A. $\frac{2}{5}$. C. 17.

Length of head $\frac{1}{6}$, of pectoral $\frac{1}{5}$, of base of dorsal $\frac{1}{11}$, of base of anal $\frac{1}{8}$, of caudal $\frac{1}{6}$ of the total length. Height of head $\frac{1}{5}$, of body $\frac{1}{6}$, of dorsal fin $\frac{1}{7}$, of ventral $\frac{1}{5}$, of anal $\frac{1}{5}$ of the total length.

Eyes. Diameter $\frac{1}{5}$ of length of head, 2 diameters from end of snout, 1 diameter apart.

Body strongly compressed.

A free bifurcated suborbital spine arises opposite to, but below, the anterior margin of the orbit, and extends to below its centre. The posterior extremity of the upper jaw does not extend so far as to beneath the orbit. Barbels large, well developed, and all six longer than the eye.

Fins. Dorsal arises midway between the posterior margin of the orbit and the base of the caudal; its first three or four rays are anterior to the ventral fin. Caudal generally entire; but its centre rays are sometimes the longest, occasionally the shortest.

Scales very conspicuous.

Lateral line absent.

Colours. Generally dirty yellowish, with a dark band extending from the centre of the snout, and ending in a black ocellus just above the centre of the base of the caudal fin. Along this dark band are a series of indistinct but nearly black blotches, whilst the back has similar dark stains. Dorsal and caudal with blackish rows of dots.

Hab. Rivers and tanks throughout Orissa, growing to nearly 4 inches in length.

124. LEPIDOCEPHALICHTHYS BALGARA, H. Buch.

Jubbi cowri (Oorlah).

B. iii. D. $\frac{2}{6}$. P. 7. V. 7. A. $\frac{2}{5}$. C. 16.

I have not seen the armed pectoral ray in this species, which

otherwise appears very similar to the Madras one ; however, I have no specimen from that locality with me so as to be able to compare the two.

Dr. Günther remarks, in 'Catalogue of Fishes,' vol. vii. p. 365, that in my drawing in the 'Proceedings' of this Society and in the 'Fishes of Malabar,' the pectoral fin of the latter fish is "erroneously represented," as the semiosseous spine is attached to the fin by the usual interradiat membrane, and not detached. *The drawing was a correct one* of my single specimen, which was not in a good state of preservation, and which I placed in the British Museum. My reason for not delineating the membrane, which normally exists, was simply because it was absent ; and I merely copied correctly from what I saw before me, without adding to or subtracting from it.

125. ENGRAULIS BÆLAMA, Forsk.

B. xi. D. $\frac{3}{11}$. P. 13. V. 6. A. $\frac{1}{31}$. C. 19. L. l. 40. L. tr. 9.

Teeth. Five in both jaws, vomer, and palatines. The serrated abdominal scales extend from the gill-openings, there being fifteen anterior to the base of the ventral, and nine posterior to it. One specimen $5\frac{1}{2}$ inches long from the sea at Chanderpore.

126. ENGRAULIS PURAVA, H. Buch.

Tampara, Pussai (Oorlah).

B. xii. D. $\frac{3}{10}$. P. 15. V. 6. A. $\frac{3}{40}$. L. l. 46. L. tr. 12.

Hab. Taken in numbers in the sea at Chanderpore.

127. ENGRAULIS RHINORHYNCHUS, Bleeker.

B. xi. D. $\frac{3}{10}$. P. 13. V. 7. A. $\frac{3}{33-34}$. C. 19. L. l. 37. L. tr. 9.

Hab. Many specimens up to 4 inches in length were taken in the sea at Chanderpore.

128. ENGRAULIS TATY, H. Buch.

B. xiii. D. $\frac{1}{14}$. P. 16. V. 7. A. $\frac{2}{51-54}$. C. 19. L. l. 42-46. L. tr. 12.

Hab. Rivers in Orissa within tidal influence.

129. ENGRAULIS TELARA, H. Buch.

Pencha (Bengali). *Tampara* (Oorlah).

B. xiii. D. $\frac{3}{10}$. P. 15. V. 7. A. $\frac{2}{70-75}$. C. 19. L. l. 52. L. tr. 14.

Hab. Rivers in Orissa within tidal influence.

130. COILIA RAMCARATI, H. Buch.

Oorialli (Oorlah).

B. xi. D. $\frac{1}{12}$. P. $\frac{6}{11}$. V. 7. A. 110. L. l. 70-76.

Dr. Günther observes, "Abdomen not serrated in front of the ventrals," and apparently has four specimens to describe from. However, I have not been fortunate in obtaining any such as he records; for out of 28 specimens in Orissa and at Coconada, all were serrated anterior to the ventrals, with 4 sharp scales, and with from 8 to 11 posterior to it.

I obtained a very curious malformation in one of these fishes. The caudal end of the fish is superseded opposite the 44th scale of the lateral line, and an entirely new description of tail exists, being a long forked one, nearly $\frac{1}{4}$ of the total length of the fish.

Hab. Orissa, from the sea.

131. CHATOËSSUS MANMINA, H. Buch.

? *Clupanodon cortius*, H. Buch.

Mackundi (Ooriah).

B. vi. D. $\frac{2}{12}$. P. 17. V. 8. A. $\frac{3}{19-21}$. C. 21. L. l. 58-60.
L. tr. 22.

Hab. Grows to about 8 inches in length, and is found in rivers and tanks in Orissa.

132. CLUPEA CHAPRA, H. Buch.

C. indica, Gray.

Having been favoured with an examination of the MS. drawings of Hamilton Buchanan, of which he was deprived when leaving India, I find the *Clupea chapra* of Hardwicke's illustrations is traced from the *Clupanodon chapra* of Hamilton Buchanan, and is the same as the species described by Dr. Günther as *Clupea indica* (Gray). Hamilton Buchanan's description is at pp. 248, 383, of his work on the fishes of the Ganges. On the back of the original drawing is written "*Clupanodon chapra*," leaving no question of doubt as to its identity.

133. CLUPEA PALASAH, Cuv. & Val.

Clupanodon ilisha, H. Buch.

Ilisha (Ooriah), *Hilsa* or *Ilisha* (Bengali), *Pulasu* (Telugu), *Ootum* (Tamil).

B. vi. D. $\frac{3}{15-16}$. P. 15. V. 9. A. $\frac{2}{17}$. C. 19. L. l. 45-49.
L. tr. 17.

Having for the last few months been examining the fisheries of this and other species of fish, I have no hesitation in most positively asserting that Russell's fish and Hamilton Buchanan's are identical. I have specimens from 2 inches in length to 19 inches.

This fish ascends the rivers to breed, and I have seen it taken in thousands from the Hooghly to the Canvery.

Genus CORICA, H. Buch.

Clupeoides, Bleeker.

134. CORICA SOBORNA, H. Buch.

Cutwal alise, Godhaee (Oorlah).D. $\frac{3}{13}$. P. 13. V. 8. A. $\frac{2}{11}$ ii. C. 19. L. l. 40. L. tr. 10.

Both this genus and species, as given in the 'Fishes of the Ganges,' appear to have escaped Dr. Günther's observation.

Length of head $\frac{2}{11}$, of pectoral $\frac{2}{11}$, of base of dorsal $\frac{1}{7}$, of base of anal $\frac{1}{7}$, of caudal $\frac{2}{11}$ of the total length. Height of head $\frac{1}{6}$, of body $\frac{1}{6}$, of dorsal fin $\frac{1}{6}$, of ventral $\frac{1}{6}$, of anal $\frac{1}{6}$ of the total length.

Eyes. Diameter $\frac{2}{5}$ of length of head, $\frac{1}{2}$ a diameter from end of snout, $\frac{2}{3}$ of a diameter apart.

Abdominal edge cutting, having 11 serrated scales between the base of the pectoral and ventral fins, and 6 more posterior to the ventral.

Lower jaw the longest. Posterior extremity of the maxilla extending to beneath the centre of the orbit.

Fins. Origin of dorsal rather nearer to the base of the caudal than to the snout, the origin of the ventral being slightly anterior to it. The anal commences under the last dorsal rays. Caudal forked in its posterior third, the lower lobe the longest.

Colours. Silvery.

Hab. Mahanuddi river.

135. PELLONA DUSSUMIERI, Cuv. & Val.

Paunia puicee (Oorlah).B. vi. D. $\frac{3}{15}$. P. 19. V. 6. A. $\frac{3}{46}$. C. 21. L. l. 46. L. tr. 12.

Hab. Chanderpore, in the sea.

136. PELLONA MOTIUS, H. Buch.

Ursi (Oorlah).B. vi. D. $\frac{2}{14-15}$. P. 15. V. 6. A. $\frac{3}{36}$. C. 19. L. l. 45. L. tr. 13.

Hab. Rivers and tanks in Orissa, growing to 4 inches in length.

137. RACONDA RUSSELLIANA, Gray & Hard.

P. 13. A. 92. C. 19. L. l. 64. L. tr. 12.

Hab. Specimens from 2 to 10 inches in length taken in the sea at Chanderpore.

138. MEGALOPS CYPRINOIDES, Brouss.

Naharm (Oorlah).B. xxiv.-xxvi. D. $\frac{3}{15-17}$. P. 15. V. 10. A. 24. C. 19. L. l. 39. L. tr. $\frac{6}{6}$.

Hab. Rivers and tanks in Orissa.

139. CHIROCENTRUS DORAB, Forsk.

Kunda (Oorlah).B. viii. D. $\frac{3}{13-14}$. P. 15. V. 7. A. $\frac{3}{30-31}$. C. 19.

Hab. Sea at Chanderpore.

140. NOTOPTERUS CHITALA, H. Buch.

Chitul (Ooriah).B. viii.-ix. D. $\frac{1}{7-9}$. P. 19. V. 6. A. 110-125. C. 11. L. l. 180.
Cæc. pyl. 2.*Hab.* Rivers and tanks in Orissa.

141. NOTOPTERUS KAPIRAT, Lacép.

Pulli, "a slice" (Ooriah).B. vi.-viii. D. $\frac{1}{8}$. P. 17. V. 6. A. 100-108. C. 13. L. l. 225.
Vert. $\frac{15}{54}$.*Hab.* Fresh waters of Orissa.

142. SYMBRANCHUS CUCHIA, H. Buch.

Hab. This Eel is not rare in the rivers of Orissa.

143. TRYGON UARNAK, Forsk.

Sankush (Ooriah).

This fish ascends the Mahanuddi as high as Cuttack. The spine on its tail is very much dreaded by the fishermen.

144. MICROPHIS CUNCULUS, H. Buch.

Kunmur dant (Ooriah), "Crocodile's tooth."

The Ooriah natives say that these little pipefishes have some mysterious connexion with the teeth of the Crocodile, some fishermen asserting them to be vivified teeth, others that they are rejected tooth-picks.

145. TETRODON POTOCA, H. Buch.

Bheng pulli (Ooriah).*Hab.* Found at Cuttack in rivers and tanks.

146. TETRODON GULARIS, H. Buch.

Teepah benki (Ooriah).

This species is still more common than the preceding, and at long distances inland.

Besides the foregoing, I took several specimens of the Common Ganges Shark as far inland as Cuttack, and a species of *Pristis*, which I have not as yet identified.4. Additional Remarks on the *Megascolex diffringens*.

By W. BAIRD, M.D., F.R.S. &c.

Since I sent to the Society, last January*, a short account of a new species of Earth-worm (*Megascolex diffringens*), found in the hot-bed for stove-plants in the garden of Plas Machynlleth, in* Vide *antè* p. 40.